

CLAIMS

1. A metal catalyst obtained by contacting
- (A) at least one metal or metal compound selected from
- 5 i) tungsten compounds composed of tungsten and an element
of group IIIb, IVb, Vb, or VIb,
ii) molybdenum compounds composed of molybdenum and an
element of group IIIb, IVb, Vb, or VIb, and
iii) tungsten metal and molybdenum metal;
- 10 (B) at least one compound selected from tertiary amine
compounds, tertiary amine oxide compounds, nitrogen-
containing aromatic compounds and nitrogen-containing
aromatic N-oxide compounds;
- (C) hydrogen peroxide; and
- 15 (D) a phosphate compound.
2. The metal catalyst according to claim 1, wherein
the element of group IIIb is boron, the element of group
IVb is carbon, the element of group Vb is phosphorus and
the element of group VIb is oxygen or sulfur.
- 20 3. The metal catalyst according to claim 1, wherein
the group (A) are consisting of tungsten metal, tungsten
boride, tungsten carbide, tungsten silicide, tungsten
nitride, tungsten phosphide, tungsten oxide, tungstic acid,
sodium tungstate, tungsten sulfide, molybdenum metal,
25 molybdenum boride, molybdenum carbide, molybdenum silicide,

molybdenum nitride, molybdenum phosphide, molybdenum oxide, molybdic acid and molybdenum sulfide.

4. The metal catalyst according to any one of claim 1 to 3, wherein the metal or metal compound selected from the group (A) is at least one metal or metal compound selected from tungsten metal, tungsten boride and molybdenum metal.

5. The metal catalyst according to any one of claim 1 to 4, wherein the metal selected from the group (A) is tungsten metal.

6. The metal catalyst according to any one of claim 1 to 5, wherein the phosphate compound is phosphoric acid, the alkali metal phosphate or the alkaline earth metal phosphate.

7. A process for producing an epoxide, which comprises reacting an olefin with hydrogen peroxide in the pH range of 2 or more and 4 or less in the presence of the metal catalyst according to any one of claim 1 to 6.

8. The process for producing a β -hydroxyhydroperoxide compound or a carbonyl compound, which comprises reacting an olefin with hydrogen peroxide in the pH range of 0 or more and less than 2 in the presence of the metal catalyst according to any one of claim 1 to 6.

9. The process for producing the corresponding carbonyl compound, which comprises reacting a primary or

secondary alcohol with hydrogen peroxide in the presence of the metal catalyst according to any one of claim 1 to 6.